



# THE PSYCHOLOGY OF THE HUMAN BRAIN ALONG WITH THE EFFECTS OF GENETICALLY MODIFIED FOODS

Krish Nair

Research Scholars Program, Harvard Student Agencies, In collaboration with Learn with Leaders

## ABSTRACT

Genetically modified organisms (GMOs) have sparked widespread controversy, with public apprehensions surrounding their safety and effects. This paper delves into the psychology of the human brain concerning GMOs and their impact. It highlights that while scientific research overwhelmingly supports the safety of GMO foods, public perception remains wary, driven by psychological factors. Human psychology often leads to irrational fears, misinformation, and the politicization of science, contributing to public distrust of GMOs. Understanding these psychological aspects is crucial to addressing misconceptions and fostering informed discussions. This study underscores the significance of comprehending human psychology in the context of contemporary issues like GMOs, shedding light on the complexities that shape public opinion.

**KEYWORDS:** Genetically Modified Foods, GMOs, Human Psychology, Public Perception, Safety, Misinformation

## INTRODUCTION

Genetically modified organisms (GMOs) have been the subject of intense scrutiny in recent years. These organisms are created by artificially modifying their genes, often to obtain favorable traits or to eliminate unfavorable ones. Specifically, GMO foods have sparked controversy due to the process involved in their creation. Scientists identify desirable traits (such as insect resistance in corn), copy the corresponding genes, and insert them into the DNA of other plants. The resulting modified plants are then grown to assess whether the desired trait has been successfully passed on. However, this process has led to widespread public fear and confusion regarding the safety and effects of genetically modified foods.

### The Anti-GMO Controversy

The controversy surrounding GMOs emerged in the 1980s, when the FDA approved genetically modified foods. This approval was met with widespread debate, fueled by concerns related to health, environmental impact, and the ethical implications of tampering with nature. Human psychology plays a significant role in shaping these fears. People associate genetic modification with altering the fundamental “essence” of food, leading to apprehensions about potential severe illnesses, including cancer.

### Examining the Claims

Despite the prevailing negative connotation associated with GMOs, most (if not all) claims against them lack substantial evidence. Scientific research has failed to demonstrate that genetically modified foods pose a significant risk to human health. Nevertheless, the name “GMO” continues to evoke caution and wariness in the public psyche. Understanding these psychological factors is crucial for informed discussions about genetically modified foods.

## METHODOLOGY

This paper adopts a qualitative, secondary research approach. It involves an analysis of existing literature, studies, and expert opinions related to the psychology of the human brain and the effects of genetically modified foods. Qualitative analysis allows for a comprehensive exploration of psychological factors and public perceptions, enhancing our understanding of the topic’s nuances and complexities.

## DISCUSSION

GMOs, or genetically modified organisms, are what their name implies. They are organisms that have had their genes artificially modified by humans over time (Purdue University, n.d.). More specifically, GMO foods, or genetically modified foods, have been a topic of scrutiny in the past few years. The process of creating a GMO involves first identifying a favorable trait in a crop (insect-resistant corn being a popular example). Scientists then copy the gene for said trait and insert it into the DNA of another plant. They will grow the modified plants in order to see if the trait has been passed on (FDA, 2020). Because of what the process involves, it has led to widespread public fear and confusion (51% of American adults believe GMOs to be harmful) over the dangers and effects of genetically modified foods (Ferdman & Ferdman, 2015; Funk, 2020).

The anti-GMO controversy began sometime around the 1980’s, when genetically modified foods were given approval by the FDA (Forbes, 2022). However, when this happened, it was met with widespread controversy, mainly due to fear of health, the environment, the possible effects of tampering with nature, or even for social/political reasons (Kresge, 2022). All the fear and controversy can be explained using human psychology, as per which people believe that genetically modifying DNA changes the “essence,” which some believe contaminates the food, and that tampering with the “essence” may cause severe illnesses,

such as cancer (Blancke, 2015).

However, most (if not all) of these claims can be proven false, as there has been no evidence to prove that genetically modified foods are indeed harmful to human health, yet as the name carries such a widespread negative connotation, it is implied that it is natural for the human brain to be cautious of such things and immediately accept their fears as the truth. Additionally, the spread of misinformation and disinformation is at such a large scale in the modern digital age that fear-mongering is spreading at a rapid rate, leading to confusion. As such, genetically modified foods, or GMOs, should not at all be considered harmful to human health, yet the psychological impact of GMOs, and similar topics are potentially harmful to society as a whole.

According to the FDA, genetically modified foods are perfectly safe to eat (FDA, 2022). These foods are extensively studied and tested to make sure that they are as safe as the current foods on the market and that they do not have any different effects than non-GMO foods, and if they do, they are always beneficial. For example, some GMO foods are used to increase their nutritional value; for instance, some GMO soybeans have a different type of oil that reduces the amount of trans fat (FDA, 2022). Additional studies cited by the FDA also prove that GMOs do not cause any form of cancer, which indicates that genetically modified foods have minimal effect on the human body, yet that still leaves the unanswered question of the general wariness of GMOs, as 51% of American adults believe GMOs to be harmful, even though they are scientifically proven to be not (Funk, 2020).

A cause for the general dislike may be the political and social issues that may stem from GMOs. According to Forbes (2022), Americans specifically have a tendency to highly politicize "everything." The article also states that along with the general politicization of everyday things comes a general distrust of said things. According to another article by Forbes (2022), some people hold political beliefs against GMOs, particularly about capitalism and large corporation's takeover of the food industry. The article also points out the general implications of politicizing science, which leads to distrust of science, as seen with GMOs. All of this, however, points to human psychology, which undoubtedly plays a crucial role in the fear of GMOs.

As demonstrated, the human mind is no stranger to irrational fears, many of which lead to the spread of misinformation and disinformation. According to an article in The Atlantic (2014), humans tend to fear things that are statistically harmless but may seem dangerous. For example, humans are much more afraid of sharks than of car accidents, even though shark attacks seldom occur, while 30,000 people die from car accidents every year. The difference between the two is that shark attacks are a distant, scary, and unfamiliar possibility, while car accidents are a regular occurrence - unfamiliar things frighten humans (Khazan, 2014). This can be used to explain the irrational fear of GMOs. Genetically modifying an organism and altering it is unfamiliar to the majority of people, thus explaining the irrational fear that surrounds it, along with the subsequent

spread of false information.

## CONCLUSION

Throughout the analysis of genetically modified foods and the human brain, it is stated that genetically modified foods are not harmful to human health and, on the contrary, may even be helpful. It is also stated that the underlying reason for public distaste for genetically modified foods lies in human psychology. Human psychology is possibly one of the most important fields of study, as it often holds the answer to many of our present-day problems. For instance, in the digital age, there is a rampant spread of misinformation and disinformation, yet it all comes down to irrational fears that have minimal statistical significance, an aspect of human psychology. With GMOs being a significant example of this issue, it has never been more important to be aware of the inner workings of the human mind and how to employ that in being aware of some of the many faults that undeniably make us human.

## REFERENCES

1. Blancke, S. (2015, August 18). Why People Oppose GMOs Even Though Science Says They Are Safe. Scientific American. Retrieved November 12, 2022, from <https://www.scientificamerican.com/article/why-people-oppose-gmos-even-though-science-says-they-are-safe/>
2. Education And The Politicizing Of Everything. (n.d.). Forbes. Retrieved November 12, 2022, from <https://www.forbes.com/sites/petergreene/2022/06/14/education-and-the-politicizing-of-everything/?sh=366a5a4e5712>
3. Ferdman, R. A., & Ferdman, R. (2015, July 6). Why we're so scared of GMOs, according to someone who has studied them since the start. The Washington Post. Retrieved November 12, 2022, from <https://www.washingtonpost.com/news/wnk/wp/2015/07/06/why-people-are-so-scared-of-gmos-according-to-someone-who-has-studied-the-fear-since-the-start/>
4. Funk, C. (2020, March 18). About half of U.S. adults are wary of health effects of genetically modified foods, but many also see advantages. Pew Research Center. Retrieved November 12, 2022, from <https://www.pewresearch.org/fact-tank/2020/03/18/about-half-of-u-s-adults-are-wary-of-health-effects-of-genetically-modified-foods-but-many-also-see-advantages/>
5. GMOs And The Dangers Of Politicizing Science. (n.d.). Forbes. Retrieved November 13, 2022, from <https://www.forbes.com/sites/erikkobayashisolomon/2019/02/28/gmos-and-the-dangers-of-politicizing-science/?sh=4eacdadd566e>
6. GMOS and Your Health. (n.d.). FDA. Retrieved November 12, 2022, from <https://www.fda.gov/media/135280/download>
7. How A Decade Of GMO Controversy Changed The Dialogue About Food. (n.d.). Forbes. Retrieved November 12, 2022, from <https://www.forbes.com/sites/jennysplitter/2019/12/20/how-a-decade-of-gmo-controversy-changed-the-dialogue-about-food/?sh=105fbae06434>
8. How ARE GMOS Made? (n.d.). FDA. Retrieved November 12, 2022, from <https://www.fda.gov/media/135277/download>
9. Khazan, O. (2014, October 31). The Psychology of Irrational Fear. The Atlantic. Retrieved November 13, 2022, from <https://www.theatlantic.com/health/archive/2014/10/the-psychology-of-irrational-fear/382080/>
10. Kresge, N. (n.d.). How can scientists help ease society's fear of GMOs? Howard Hughes Medical Institute. Retrieved November 12, 2022, from <https://www.hhmi.org/bulletin/winter-2015/how-can-scientists-help-ease-societys-fear-gmo>
11. What are GMOs? (n.d.). Purdue Agriculture. Retrieved November

12, 2022, from <https://ag.purdue.edu/gmos/what-are-gmos.html>